

REMARKS

Initially, Applicants would like to express their appreciation to Examiner Hoang for the courtesies extended to Applicants' attorney during a telephone interview on August 3, 2004. Although agreement was not reached on whether Applicants' claim 1 overcame the cited references, Examiner Hoang did agree to consider Applicants' new arguments during his review.

After the foregoing response, claims 1-47 are pending in the application.

Applicants respectfully request additional consideration and review of the claims in view of the following remarks.

Rejections Under 35 U.S.C. § 102(e)

The Examiner has rejected claims 1-2, 10-11, 18-19, 27-29, 37-39, and 47 under 35 U.S.C. § 102(e) as being anticipated by Keskitalo et al. (U.S. 6,212,406). Applicants respectfully traverse this rejection.

A purpose of Applicants' claimed invention is to provide a method of reducing multiple access interference, which results from the leakage of signals of one wireless terminal into the signal of another wireless terminal. An important aspect of Applicants' claimed invention is that assigning spreading codes based on the propagation characteristics of the channel can reduce multiple access interference. This aspect of the invention is set forth, for example, in claim 1 that recites, "*assigning spreading codes to said plurality of wireless terminals based on said estimated propagation characteristics of said channels*". See, for example, page 3, lines 8-30 in Applicants' specification where this aspect of the invention is discussed.

Turning now to the cited prior art, the Keskitalo reference appears to be directed to a transmission system that can improve the detection of signals in a CDMA network. Similar to Applicants, Keskitalo discloses a reduction in multiple access interference. However, there are significant differences in Applicants' claimed invention and Keskitalo.

First, Keskitalo does not define a relationship between a channel whose propagation characteristics are estimated and assigning spreading codes, as

done by Applicants. Applicants' claim 1 recites, "assigning spreading codes to said plurality of wireless terminals based on said estimated propagation characteristics of said channels". Keskitalo does not teach or suggest this limitation. Instead, Keskitalo teaches that the controller of the transmitter-receiver informs the transmitter of the directions where significant signal components have been detected. The transmitter unit may phase the signal to be transmitted with the adapted antenna array in such a way that the angles of the greatest gain of the antenna beams points in the desired directions, as stated in column 8, lines 3-9. Also, Keskitalo teaches that the antenna array used in the transmission may be the same as the antenna array used in the reception, in column 8, lines 14-16. However, there is no connection between assignment of spreading codes and estimated propagation characteristics that is expressly or inherently mentioned by Keskitalo. Therefore, Keskitalo teaches a technique for reducing multiple access interference that is quite different from Applicants' claimed invention.

Second, Keskitalo distinguishes between signal components in that the system disclosed uses an adaptive antenna array that searches for the angle of arrival and delay of signal components. Once known, Keskitalo combines the "best" signal components, based on the power of the received signal components. Keskitalo's system then produces a strong directed beam with the angle of arrival towards the mobile station, as stated in column 6, lines 17-65. By contrast, Applicants' claim 1 recites, "estimating propagation characteristics ... and assigning spreading codes to said plurality of wireless terminals based on said estimated propagation characteristics ... ", without making distinctions between the signal components. Accordingly, these distinctions are sufficient to distinguish Applicants' claim 1 from Keskitalo.

In view of the foregoing, Applicants submit that each and every element of claim 1 is not described, either expressly or inherently, by Keskitalo and therefore claim 1 is not anticipated by Keskitalo. Since claims 2-10 ultimately depend from claim 1, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 11 has a limitation similar to that in independent claim 1. For example, claim 11 recites “assigning a spreading code to said wireless terminal based on said estimated propagation characteristics of said communication channel”. Keskitalo does not teach this limitation for the above-mentioned reasons and, as such, claim 11 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 12-17 ultimately depend from claim 11, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 18 has a limitation similar to that in independent claim 1. For example, claim 18 recites “assigning codes to a plurality of wireless terminals based on said received channel propagation characteristics, wherein said codes are spreading codes”. Keskitalo does not teach this limitation for the above-mentioned reasons and, as such, claim 18 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 19-27 ultimately depend from claim 18, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 28 has a limitation similar to that in independent claim 1. For example, claim 28 recites “a code optimizer for assigning codes to said plurality of wireless terminals based on said channel propagation characteristics, wherein said codes are spreading codes”. Keskitalo does not teach this limitation for the above-mentioned reasons and, as such, claim 28 is also believed to be allowable for the reasons set forth above for claim 1. Since claims 29-37 ultimately depend from claim 28, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

Independent claim 38 has a limitation similar to that in independent claim 1. For example, claim 38 recites “means for assigning spreading codes to said plurality of wireless terminals based on said estimated channel propagation characteristics, wherein said codes are spreading codes”. Keskitalo does not teach this limitation for the above-mentioned reasons and, as such, claim 38 is also believed to be allowable for the reasons set forth above for claim 1. Since

claims 39-47 ultimately depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for independent claim 1.

In view of the foregoing, Applicants respectfully request that the rejection under 35 USC §102(e) be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 3-9, 12-17, 20-26, 30-36, and 40-46 under 35 U.S.C. § 103(a) as being unpatentable over Keskitalo et al. (U.S. 6,212,406) in view of various other references. Applicants respectfully traverse this rejection.

Claims Rejected under Keskitalo and Magnusson

Claims 3-5, 7, 12-14, 16, 20-22, 24, 30-32, 34, 40-42, and 44 were rejected under 35 U.S.C. §103(a) as being unpatentable over Keskitalo et al. (U.S. 6,212,406) in view of Magnusson (U.S. 6,163,524).

Keskitalo does not teach the limitations recited in Applicants' independent claims 1, 11, 18, 28, and 38 for the above-mentioned reasons. Magnusson does not cure the deficiencies noted above for Keskitalo. Since claims 3-5 and 7 depend from claim 1, claims 12-14 and 16 depend from claim 11, claims 20-22 and 24 depend from claim 18, claims 30-32 and 34 depend from claim 28, and claims 40-42 and 44 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Keskitalo and Magnusson still does not embody Applicants' claims 3-5, 7, 12-14, 16, 20-22, 24, 30-32, 34, 40-42, and 44.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 3-5, 7, 12-14, 16, 20-22, 24, 30-32, 34, 40-42, and 44.

Claims Rejected under Keskitalo, Magnusson, and Easton

Claims 6, 8, 15, 17, 23, 25, 33, 35, 43, and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable over Keskitalo et al. (U.S. 6,212,406) in view of Magnusson (U.S. 6,163,524), and further in view of Easton (U.S. 5,764,687).

The combination of Keskitalo and Magnusson does not teach or suggest the limitations recited in Applicants' independent claims 1, 11, 18, 28, and 38 for the above-mentioned reasons. Easton does not cure the deficiencies noted above for Keskitalo and Magnusson. Since claims 6 and 8 depend from claim 1, claims 15 and 17 depend from claim 11, claims 23 and 25 depend from claim 18, claims 33 and 35 depend from claim 28, and claims 43 and 45 depend from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Keskitalo, Magnusson and Easton still does not embody Applicants' claims 6, 8, 15, 17, 23, 25, 33, 35, 43, and 45.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 6, 8, 15, 17, 23, 25, 33, 35, 43, and 45.

Claims Rejected under Keskitalo and Dent

Claims 9, 26, 36, and 46 were rejected under 35 U.S.C. §103(a) as being unpatentable over Keskitalo et al. (U.S. 6,212,406) in view of Dent (U.S. 5,831,977).

Keskitalo does not teach the limitations recited in Applicants' independent claims 1, 11, 18, 28, and 38 for the above-mentioned reasons. Dent does not cure the deficiencies noted above for Keskitalo. Since claim 9 depends from claim 1, claims 26 depends from claim 18, claim 36 depends from claim 28, and claim 46 depends from claim 38, these dependent claims are therefore also believed to be allowable for the same reasons set forth above for the respective independent claims. Therefore, the combination of Keskitalo and Dent still does not embody Applicants' claims 9, 26, 36, and 46.

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Accordingly, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §103(a) rejection of claims 9, 26, 36, and 46.

Claim Amendments

Claims 1, 3, 4, 6, 8, 11, 13, 15, 17-21, 23, 25, 28, 30, 31, 33, 35, 38, 40, 41, 43, and 45 have been amended to more clearly and particularly point out that which Applicants regard as the invention and to improve their form generally. It is submitted that the amendments made do not narrow the scope of the claimed subject matter in any way.

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Conclusion

In view of the remarks, Applicants submit that claims 1-47 are in condition for allowance, and reconsideration is therefore respectfully requested. If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is invited to contact the undersigned to resolve the issues.

Respectfully submitted,

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Atts.

I hereby certify that this correspondence is being deposited in the United States Postal Service as first class mail in an envelope with sufficient postage addressed to: Mail Stop AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on AUG. 6, 2004.
Patricia L. Giebler Date 8/6/04
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